What is claimed is:

1. A pipeline processing type shaping apparatus that calculates a predetermined scheduling time by performing pipeline processing by a pipeline processing portion concerning an input packet of a plurality of flows and shaping each of these flows, including:

a storage part that manages and stores flow information being processed in the pipeline processing portion for each of the flows; and

a calculating part that calculates the predetermined scheduling time, referring to the flow information regarding the flow of a packet input to the pipeline processing portion, and assuming that a virtual packet was input in which all packets that belong to the flow are connected.

2. The pipeline processing type shaping apparatus according to claim 1, wherein the calculating part includes a reading part for reading the flow information of a flow to which this packet belongs from the storage part in response to the input of a packet to the pipeline processing portion and a means for calculating the predetermined scheduling time referring to this read information.

3. The pipeline processing type shaping apparatus according to claim 2, further including a storage information update part that updates the flow information of the storage part for each of the flows in response to the input of the packet to the pipeline processing portion.

4. The pipeline processing type shaping apparatus according to claim 3, wherein the storage part has internal

registers that are equal to the number of processing blocks of the pipeline processing portion, and each of the internal registers stores the flow information of a packet that belongs to the same flow for which pipeline processing is being processed.

5. The pipeline processing type shaping apparatus according to claim 4, wherein the flow information includes the sum total of the packet length.

6. A pipeline processing type shaping method that performs the pipeline processing by a pipeline processing portion concerning an input packet for a plurality of flows, shapes each of these flows, and calculates a predetermined scheduling time, including the steps of:

managing and storing flow information being processed in the pipeline processing portion for each of the flows; and

calculating the predetermined scheduling time, referring to the flow information regarding the flow of the packet input to the pipeline processing portion, and assuming that a virtual packet was input in which all packets that belong to the flow are connected.

7. The pipeline processing type shaping method according to claim 6, wherein the calculating step includes the steps of reading the flow information of a flow to which this packet belongs from a storage part in response to the input of a packet to the pipeline processing portion and calculating the predetermined scheduling time referring to this read information.

8. The pipeline processing type shaping method according to claim 7, further including the step of updating flow information of the storage part for each of the flows in response

to input of the packet to the pipeline processing portion.

9. The pipeline processing type shaping method according to claim 8, wherein the storage part has internal registers that are equal to the number of processing blocks of the pipeline processing portion and wherein each of the internal registers stores the flow information of a packet belonging to the same flow for which pipeline processing is being processed.

10. The pipeline processing type shaping method according to claim 9, wherein the flow information includes the sum total of the packet length.

11. A recording medium that records a control program of a pipeline processing type shaping method in which a predetermined scheduling time is calculated by performing the pipeline processing by a pipeline processing portion concerning an input packet for a plurality of flows and shaping each of these flows, and the control program, including the steps of:

managing and storing flow information being processed in the pipeline processing portion for each of the flows; and

calculating the predetermined scheduling time, referring to the flow information regarding the flow of the packet input to the pipeline processing portion, and assuming that a virtual packet was input in which all packets that belong to the flow are connected.

12. The recording medium according to claim 11, further including the steps of reading the flow information of a flow to which this packet belongs from the storage part and calculating the predetermined scheduling time referring to this read information, in response to the input of the packet to the pipeline

processing portion,

13. The recording medium according to claim 12, further including the step of updating flow information of the storage part for every flow in response to the input of the packet to the pipeline processing portion.

14. The recording medium according to claim 13, wherein the storage part has internal registers that are equal to the number of processing blocks of the pipeline processing portion and wherein each of the internal registers stores the flow information of a packet belonging to the same flow for which pipeline processing is being processed.

15. The recording medium according to claim 14, wherein the flow information includes the sum total of the packet length.

16. A pipeline processing type shaping apparatus, including:

a unit for performing pipeline processing concerning an input packet of a plurality of flows; and

a unit for calculating a predetermined scheduling time by shaping each of these flows assuming that a virtual packet was input in which packets that belong to the flow are connected.

17. A pipeline processing type shaping apparatus that calculates a predetermined scheduling time by performing pipeline processing by a pipeline processing portion concerning an input packet of a plurality of flows and shaping each of these flows, including:

a storage means that manages and stores flow information being processed in the pipeline processing portion for each of the flows; and

a calculating means that calculates the predetermined scheduling time, referring to the flow information regarding the flow of a packet input to the pipeline processing portion, and assuming that a virtual packet was input in which all packets that belong to the flow are connected.

18. The pipeline processing type shaping apparatus according to claim 17, wherein the calculating means includes a means for reading the flow information of a flow to which this packet belongs from the storage means in response to the input of a packet to the pipeline processing portion and a means for calculating the predetermined scheduling time referring to this read information.